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Reflections on how far Brazil can go with Financial Education in Basic Education

Abstract: Some international assessment on financial literacy showed Brazil's low score in comparison to other countries. Although Financial Education began in Brazil in 2010 as a National Strategy, it was in 2018 that a new curriculum was established for Basic Education addressing actions for the development of financial literacy. The objective of the study was to investigate some characteristics of countries that performed better in financial literacy to analyze what Brazil should seek to achieve higher grades. The research is quantitative and based on documental analysis. Study results showed that some important features are outside the educational system and would restrict the achievements that Brazil can pursue.

Keywords: Financial Education. Financial Literacy. PISA. Competences. Skills.

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Article

Reflexiones sobre hasta dónde puede llegar Brasil con la Educación Financiera en la Educación Básica

Resumen: Algunas evaluaciones internacionales sobre alfabetización financiera han mostrado una puntuación baja para Brasil en comparación con otros países. Aunque la Educación Financiera comenzó en Brasil en 2010 como una Estrategia Nacional, fue en 2018 que se estableció un nuevo currículo para la Educación Básica, con el objetivo de implementar acciones para el desarrollo de la alfabetización financiera. El objetivo del estudio fue investigar algunas características de los países que obtuvieron mejores resultados en alfabetización financiera para analizar qué debería buscar Brasil para alcanzar puntuaciones más altas. La investigación es cuantitativa y se basa en el análisis documental. Los resultados del estudio mostraron que algunas características están fuera del sistema educativo y restringirían los logros que Brasil puede obtener.

Palabras clave: Educación Financiera. Alfabetización Financiera. Prueba PISA. Habilidades.

Reflexões sobre até onde o Brasil pode chegar com a Educação Financeira na Educação Básica

Resumo: Algumas avaliações internacionais sobre letramento financeiro mostraram uma pontuação baixa do Brasil em comparação com outros países. Embora a Educação Financeira tenha começado no Brasil em 2010 como uma Estratégia Nacional, foi em 2018 que foi estabelecido um novo currículo para a Educação Básica, para implementar ações para o desenvolvimento do letramento financeiro. O objetivo do estudo foi investigar algumas características de países que tiveram melhor desempenho em letramento financeiro para analisar o que o Brasil deveria buscar para alcançar notas mais altas. A pesquisa é quantitativa e baseada em análise documental. Os resultados do estudo mostraram que algumas características estão fora do sistema educacional e restringiriam as conquistas que o Brasil pode obter.

Palavras-chave: Educação Financeira. Letramento Financeiro. PISA. Competências. Habilidades.

1 Introduction

Brazil has had low scores in students' international assessments concerning to financial literacy, according to the results of the Programme for International Student Assessment (PISA) performed in 2015 (OECD, 2017) and 2018 (OECD, 2020) — the ultimate results in financial literacy from PISA 2022 were not available meanwhile this paper was conceived. Brazil's bad performance was also verified in the 2014 Global FinLit Survey (Klapper, Lusardi and Oudheusden, 2015), which measured the adults' financial literacy skills.

In this scenario, the purpose of this study is to search for what causes the low performance mentioned. In other words, we intend to investigate why Brazil has such bad performance when compared with other countries. In order to answer our main question, we will search for features that distinguish Brazil when compared with the highest scores' countries.

Thus, as a second goal, we intend to reflect on how far or how deep can Brazil go in developing students' financial literacy at Middle School. This second goal is a consequence of the first one, as long as we hypothesize that there must be some common features in the countries that showed the highest scores that are not possible for local teachers and/or researchers to achieve in Brazil.

2 What is financial education and financial literacy?

OECD (2005) made a statement about the definition of Financial Education, which was endorsed by G20 leaders in 2012 and is used in a majority of countries, including Brazil:

> Financial education is the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being. (OECD, 2005, p. 4).

We are not comfortable with the words consumers/investors, and we would rather use citizens. Therefore, we define Financial Education

> as a continuum in the lives of all individuals. It refers to strategies and methodologies for addressing financial problems that aim to improve the well-being of citizens, and this well-being includes awareness of the financial problems that they may face individually or collectively within the family or in other contexts (Perin and Campos, 2022, p. 3).

This definition is in line with Barbosa, Araújo and Paes (2020), for whom Financial Education is not restricted to mathematical concepts. They state that Financial Education should allow the student not only to learn the best ways to acquire a good, product or service, but mainly to reflect on whether or not to acquire it, perceiving consumerism as kind of behavior that should be avoided.

Moreover, we conceive financial literacy as a competence that is related to the ability to read, analyze and interpret financial situations, as well as to build basic knowledge necessary for Financial Mathematics pertinent to the context of the subjects. Campos and Figueiredo (2020) defined that financial literacy encompasses three components, the learning of concepts

(mathematical and financial), behaviors, and attitudes:

> […] knowledge related to financial literacy is mostly represented by Financial Mathematics, which includes knowledge about numbers, percentage, compound interest, financing, debt, investment, inflation, etc. Other knowledge that can be related concerns to Economics and the Financial System (Perin and Campos, 2022, p. 5).

The importance of financial literacy is highlighted by OECD in PISA 2018 report.

> First, young people are likely to face more challenging decisions if financial transactions continue to grow in complexity. Financial education will therefore have a role, in conjunction with financial consumer protection and regulations, in equipping people with the skills needed to understand more complex products and services, choose those most appropriate for them, and protect themselves from financial scams. […] Second, in some countries, future generations will probably bear more financial risks during their lifetime than the current adult population, due to factors such as increased life expectancy, less welfare protection and more uncertainty in retirement income due to changing pension regimes. [..] Third, growing income and wealth inequality might mean that without strong financial literacy, socio-economically disadvantaged groups could fall further behind. Education, income and wealth have been shown to be strongly correlated with adults' financial knowledge, and parents with less education, income or wealth have been found to be less well-equipped than other parents to transmit financial knowledge to their children (OECD, 2020, p. 34).

According to Coutinho and Campos (2018), behaviors and attitudes that are part of financial literacy as a competence, involve the ability to take a reasoned critical stance and make conscious decisions aimed at individual and social financial well-being. Thus, critical attitudes and engagement are strongly presented in the definition of literacy, which is why we define it as a competency.

3 Results from PISA 2015

Ten countries from OECD — Australia, the Flemish Community of Belgium, Canada, Chile, Italy, the Netherlands, Poland, the Slovak Republic, Spain, and the United States — and 5 partner countries and economies — Brazil, China, Lithuania, Peru, and the Russian Federation — took part of the 2015 assessment. Brazil performed the lowest score overall. The results of the financial literacy assessment can be seen in Table 1.

The scale of financial literacy is divided into five levels.

> Questions at Level 1 are considered to be the easiest. At best, students performing at Level 1 can recognise the difference between needs and wants, can make simple decisions on everyday spending, and can recognise the purpose of everyday financial documents, such as an invoice. Level 2 is considered the baseline level of proficiency in financial literacy that is required to participate in society. […] Level 5 questions are considered to be the most challenging for 15-year-old students at the end of compulsory education. Students performing at Level 5 can look ahead to solve financial problems or make the kinds of financial decisions that will be only relevant to them in the future. They can take into account features of financial documents that are significant but unstated or not immediately evident, such as transaction costs, and they can describe the potential outcomes of financial decisions, showing an understanding of the wider financial landscape, such as income tax. (OECD, 2017, p. 30)

Table 1: Scores of financial literacy by country in PISA 2015

	Pontuação média no PISA 2015	Proporção de estudantes com baixo desempenho (Nível 1 ou inferior)	Participação dos melhores desempenhos (Nível 5)
	Mean	%	%
OECD average	489	29	12
China	566	9	33
Belgium	541	12	24
Canadian provinces	533	13	22
Russia	512	11	11
Netherlands	509	19	17
Australia	504	19	17
United States	487	22	10
Poland	485	20	8
Italy	483	20	6
Spain	469	25	6
Lithuania	449	32	4
Slovak Republic	445	35	6
Chile	432	38	3
Peru	403	48	1
Brazil	393	53	3

Source: OECD (2017, p. 31)

More than half (53%) of the Brazilian students performed at Level 1 or lower, while Level 5 was achieved by only 3% of them. In countries with the highest scores, most of the students were at Level 5. Table 2 shows the percentage of students that hold some basic banking services per country.

Table 2: Performance in financial literacy versus basic financial products

	Mean financial literacy score in PISA 2015	Percentage of students holding a bank account	Percentage of students holding a bank account and/or a prepaid debit card
	Mean	%	%
OECD average	489	56,4	60,2
Australia	509	95,0	95,5
Canadian provinces	504	79,0	80,7
Belgium (Flemish)	533	77,6	79,7
United States	541	74,7	75,4
Spain	487	52,8	56,1
China	469	52,4	54,2
Slovak Republic	566	46,1	47,9

Lithuania	445	42,3	44,8
Italy	449	39,0	39,1
Australia	483	35,3	56,6
Russia	512	28,1	46,6
Poland	485	27,8	29,6
Chile	432	27,2	29,7
Peru	403	N	n
Brazil	393	N	n

Source: OECD (2017, p. 36)

In order to measure the dependence between financial literacy score and the other two variables representing basic financial products, we have calculated the Pearson's correlation coefficient, which resulted +0,48 for the bank account and +0,53 for debit card. The positive signal of the correlation coefficients shows that the higher percentage of students that holds bank account and debit card, the higher is the performance in financial literacy. There were no data available from Brazil concerning to this feature.

Another feature showed in the PISA 2015 report was the percentage of students who earn money from work activity, as it can be seen in Figure 1.

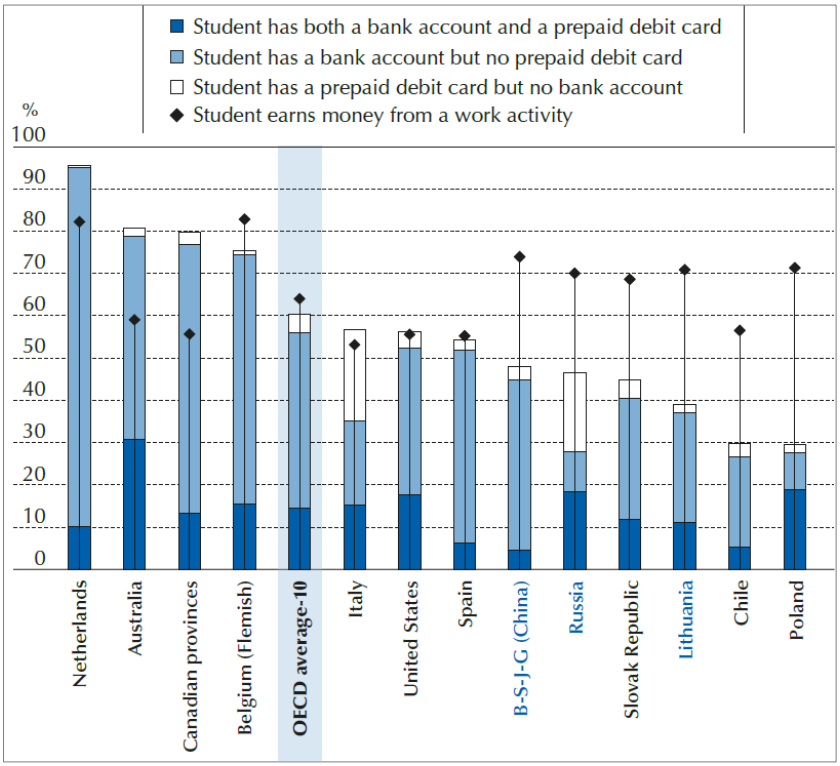

Figure 1: Students who use basic financial products and/or earn money from work (OECD, 2017, p. 41)

Brazil does not appear on Figure 1, probably because the country has strong restrictions to allow 15 years-old people to work[1].

[1] It is possible to get permission to work at 15 years-old age under several restrictions. See https://www.jusbrasil.com.br/artigos/tenho-15-anos-posso-assinar-carteira/1768125124.

4 Results from PISA 2018

The PISA 2018 assessment of financial literacy was the third of its kind and it covered 20 countries, including 13 OECD countries — Australia, Canada, Chile, Estonia, Finland, Italy, Latvia, Lithuania, Poland, Portugal, the Slovak Republic, Spain and the United States — and seven partners — non-OECD: countries Brazil, Bulgaria, Georgia, Indonesia, Peru, Russia and Serbia. The results can be seen in Table 3.

Table 3: Financial literacy results per country in PISA 2018

	Mean score in PISA 2018	Share of low achievers (below Level 2)	Share of top performers (Level 5)	Relative score1 after accounting for performance in mathematics and reading
	Mean score	%	%	%
OECD average	505	14.7	10.5	2
Estonia	547	5.3	19.0	16
Finland	537	9.9	19.9	14
Canadian provinces	532	8.8	16.7	4
Poland	520	9.5	11.8	-3
Australia	511	15.6	14.1	4
United States	506	16.0	12.4	5
Portugal	505	14.0	8.3	1
Latvia	501	10.6	6.1	1
Lithuania	498	14.2	7.7	7
Russia	495	14.4	6.3	-1
Spain	492	15.0	5.7	M
Slovak Republic	481	21.2	7.2	-9
Italy	476	20.9	4.5	-17
Chile	451	30.2	3.0	5
Serbia	444	33.2	2.5	-15
Bulgaria	432	38.5	2.4	-10
Brazil	420	43.6	1.9	12
Peru	411	46.4	1.4	-3
Georgia	403	49.8	0.7	-3
Indonesia	388	57.4	0.3	-3

Source: OECD (2020, p. 17)

In the 2018 assessment Brazil obtained a better result, as it can be seen at Figure 2. In this edition, 43,6% of the Brazilian students performed below Level 2 (against 53% in the previous exam).

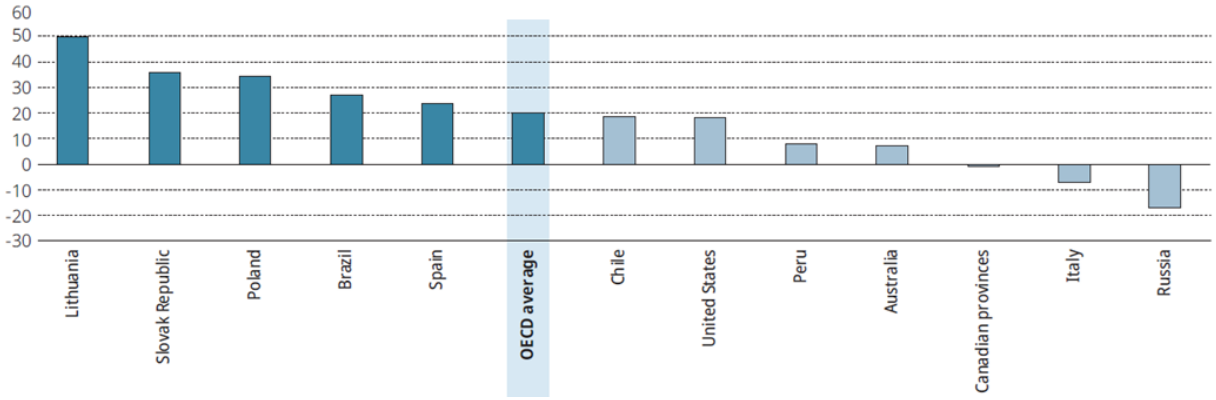

Figure 2: Change in performance between PISA 2015 and 2018 results (OECD, 2020, p. 61)

The PISA 2018 report shows the correlation between scores of financial literacy and reading and mathematics, as it can be seen in Table 4.

Table 4: Correlation between performance in financial literacy, Reading and Mathematics

OECD average correlation, where 0.00 signifies no relationship and 1.00 signifies the strongest positive relationship		
Correlation between performance in …		
Mathematics	Reading	… and performance in:
0,87	0,83	Financial literacy
	0,81	Mathematics

Source: OECD (2020, p. 62)

The results showed in Table 4 demonstrate a strong relation between students' performance in the three areas assessed. It seems to be not a surprise that mathematics' score is strongly related to the one of financial literacy, but the correlation between reading and financial literacy maybe not as logical.

> On a more practical level, the PISA test is conducted in a text-based format and students who struggle with reading are likely to struggle with understanding the material in the financial literacy assessment. Likewise, many financial decisions involve the manipulation of quantities of money, which necessarily requires a degree of mathematical literacy. […] On average across OECD countries/economies, at least half of all top performers in financial literacy were also top performers in mathematics (60%) or reading (51%) […] Similarly, around three in four low performers in financial literacy were also low performers in mathematics (82%) and reading (77%), on average across OECD countries/economies. Only 1% of students were low performers in financial literacy but not low performers in both mathematics and reading. Once again, performance in the three subjects appears to be linked (OECD, 2020, p. 62).

This correlation has been already verified in PISA 2015 results and states a premise that that having good results in mathematics and reading are the bottom for achieving good grades in financial literacy However, in terms of correlation, the most important maybe the one observed between financial literacy score and per capita GDP, as it is shown in Figure 3.

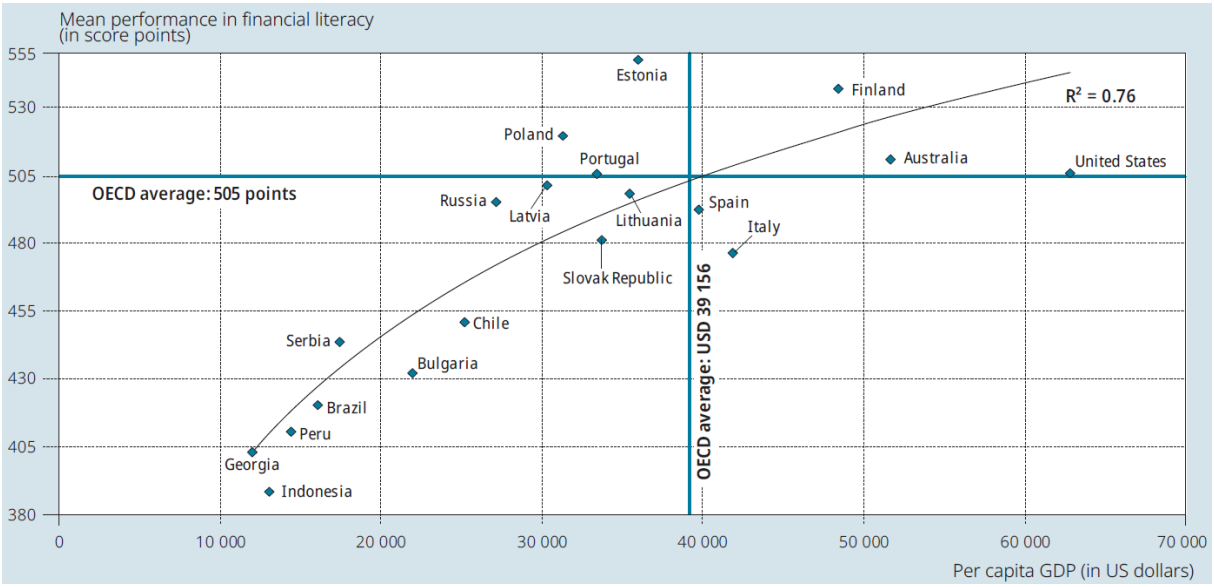

Figure 3: Mean performance in financial literacy and per capita GDP (OECD, 2020, p. 64)

Figure 3 shows a strong correlation between the financial literacy score and per capita GDP. The determination coefficient (R^2) showed at the right-top of the graph says that 76% of score's variation on financial literacy is explained by the variation on per capita GDP. R^2 is the square of Pearson's correlation coefficient.

The PISA 2018 report also points out a great difference between the score of advantaged and disadvantaged students:

> In every country/economy that participated in the PISA 2018 financial literacy assessment, advantaged students performed significantly better than disadvantaged students […] The gap between advantaged and disadvantaged students in Bulgaria, Peru and the Slovak Republic was greater than 100 score points, and the gap was also larger than the OECD average in Australia, Brazil, Portugal and the United States (OECD, 2020, p. 74).

Brazil does not lead this gap, but if we take a look at the Gini Index[2], which measures the poverty and inequality between countries, it is possible to demonstrate that Brazil has higher inequality than Australia, France, United States, Chile, etc. (Figure 4).

[2] The GINI indicator ranges from zero (0) to one (1 or 100). The closer to zero (0), the less unequal is the country or region. On the other hand, the closer to one (1 or 100), the more unequal.

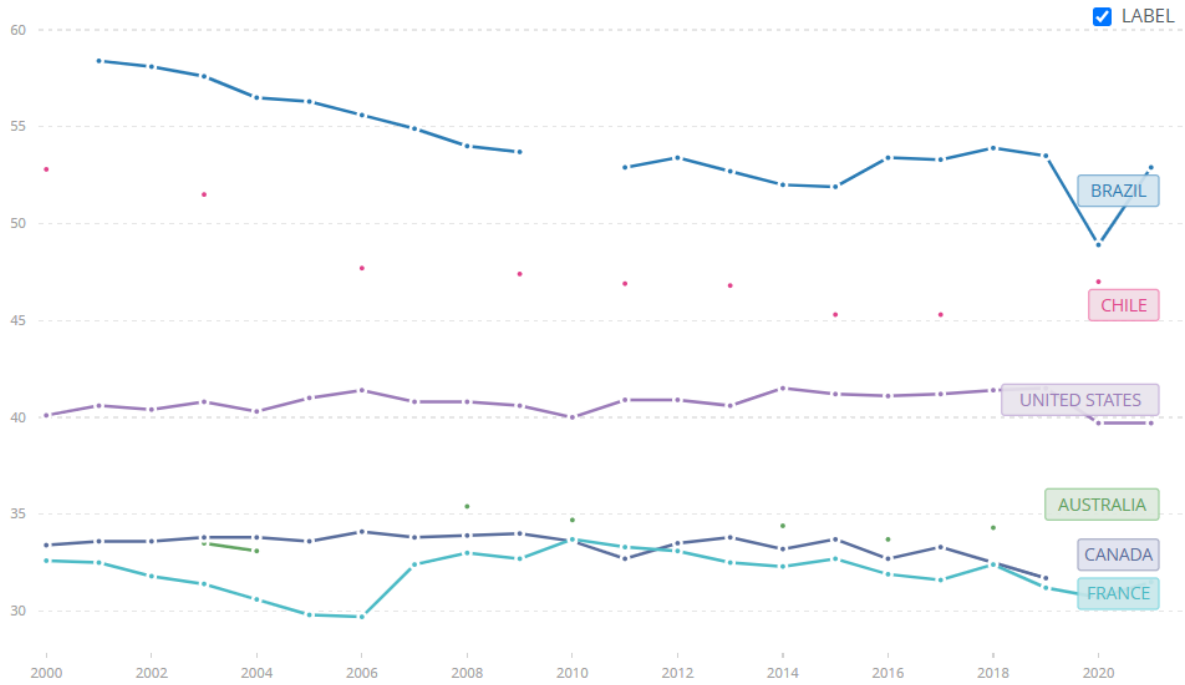

Figure 4: Gini Index for selected countries[3]

5 Results from PISA 2022

The PISA 2022 results are to be released in five volumes, but only the first two were available when this study was done, and financial literacy is located at the fourth volume. Nevertheless, some highlights can be done considering that the Covid-19 Pandemic occurred between PISA 2018 and the 2022 edition. Students' grades decreased significantly in 2022 when compared to the former assessments, as it can be seen in figure 9, which brings the results of Mathematics, Reading and Science.

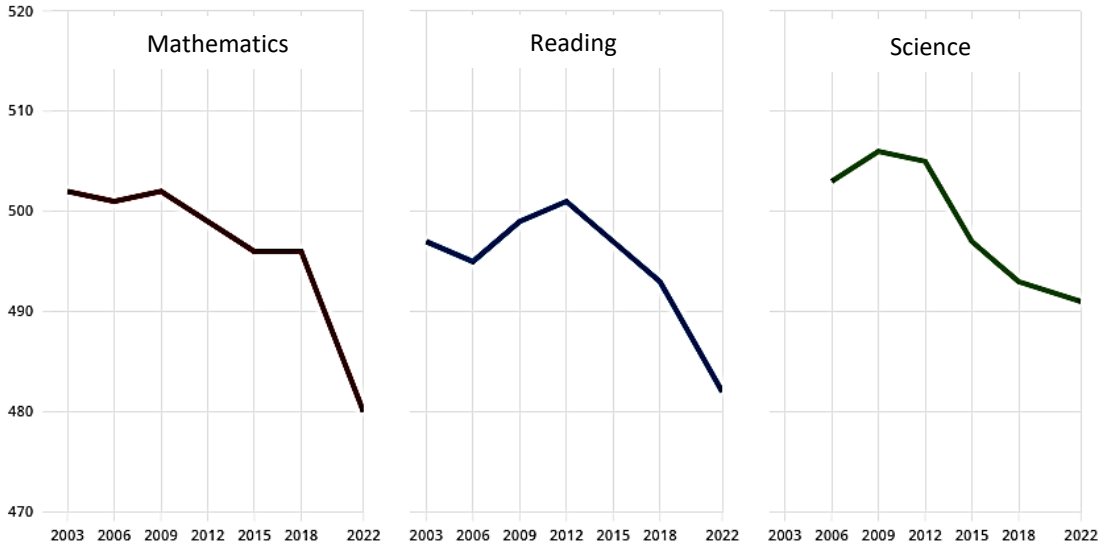

Figure 5: Mathematics, reading and science performance declined significantly (https://www.oecd.org/publication/pisa-2022-results)

[3] Retrieved from the World Bank Group website: https://data.worldbank.org/indicator/SI.POV.GINI?end=2021&locations=BR-AU-CA-CL-FR-US&start=2000

Another highlight that seems to be important to notice is that countries like Brazil, with longer school closures during the pandemic, performed worst in Mathematics when compared to the countries with limited school closures.

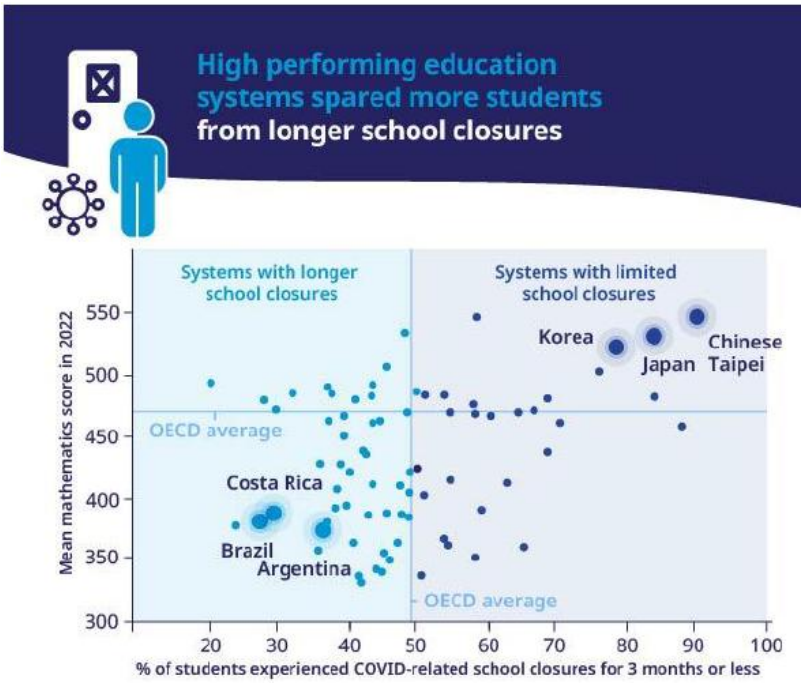

Figure 6: Lower grades in countries with longer school closures (OECD, 2023, p. 37)

Due to these highlights, we expect to see a decrease in Brazil's grade in financial literacy. It would be a surprise if it does not happen.

6 Results from Global FinLit Survey

The Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey) provides measured the financial literacy among adults across a wide array of countries (Klapper, Lusardi, and Oudheusden, 2015). It builds on early initiatives by the International Network on Financial Education (INFE) of the Organisation for Economic Co-operation and Development (OECD), the World Bank's Financial Capability and Household Surveys, the Financial Literacy around the World (FLAT World) project, and numerous national survey initiatives that collect information on financial literacy. The survey complements the efforts by delivering a very comprehensive global gauge of financial literacy to date (Klapper, Lusardi and Oudheusden, 2015).

> The information on financial literacy is based on questions added to the Gallup World Poll survey. More than 150,000 nationally representative and randomly selected adults in more than 140 economies were interviewed during the 2014 calendar year. […] The target population consists of the entire population aged 15 and above, aside from prisoners and soldiers. Financial literacy was measured using questions assessing basic knowledge of four fundamental concepts in financial decision-making: knowledge of interest rates, interest compounding, inflation, and risk diversification. (Klapper, Lusardi and Oudheusden, 2015, p. 5).

The results took into account that people who got correct answers for 3 out of 4 concepts were considered financially literate. Figure 7 shows the results as percentage of people who achieved the goal.

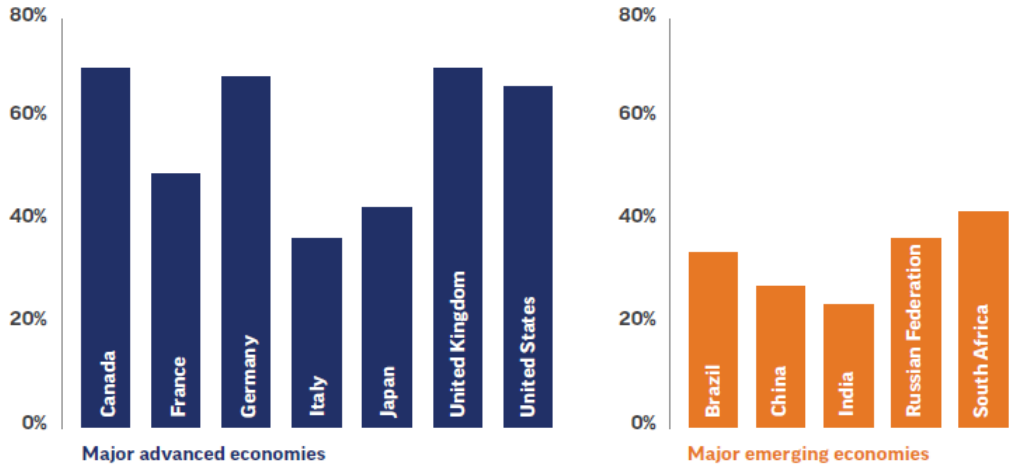

Figure 7: % of adults who are financially literate (Klapper, Lusardi and Oudheusden, 2015, p. 9)

In this survey, Brazil performed one 35% of adults considered financially literate, which is more than China and India, but less than G7 group — major advanced economies.

Moreover, this survey achieved results that confirm the scenario painted by PISA, that is, most of adults without a bank account are not financially literate, and financial literacy grows with income (Figure 8 and 9). Additionally, countries with higher scores in Mathematics in PISA 2012 showed better performance in financial literacy (Figure 10).

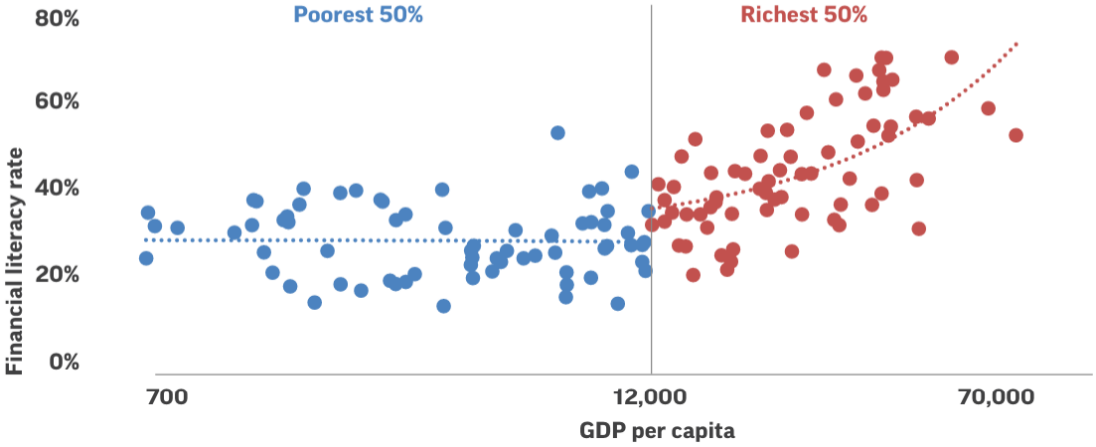

Figure 8: GDP per capita and financial literacy (Klapper, Lusardi and Oudheusden, 2015, p. 9)

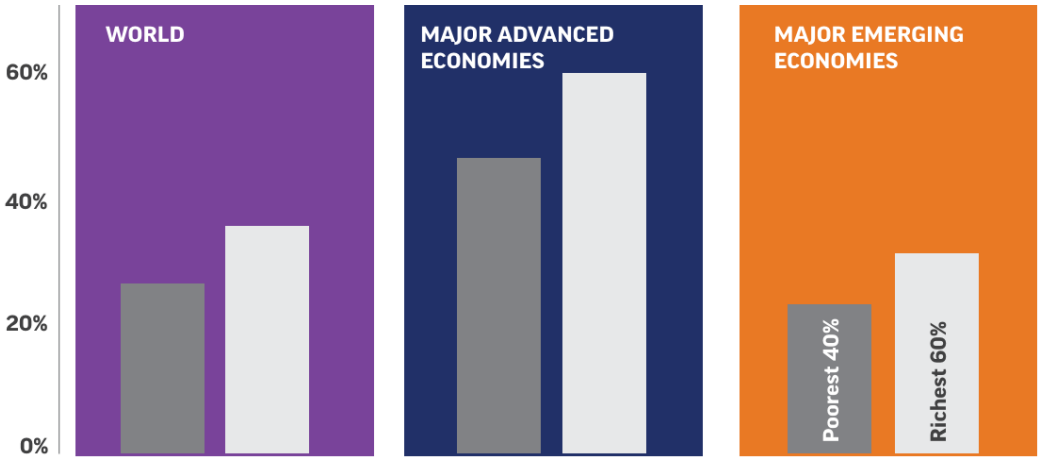

Figure 9: Financial literacy grows with income (Klapper, Lusardi and Oudheusden, 2015, p. 14)

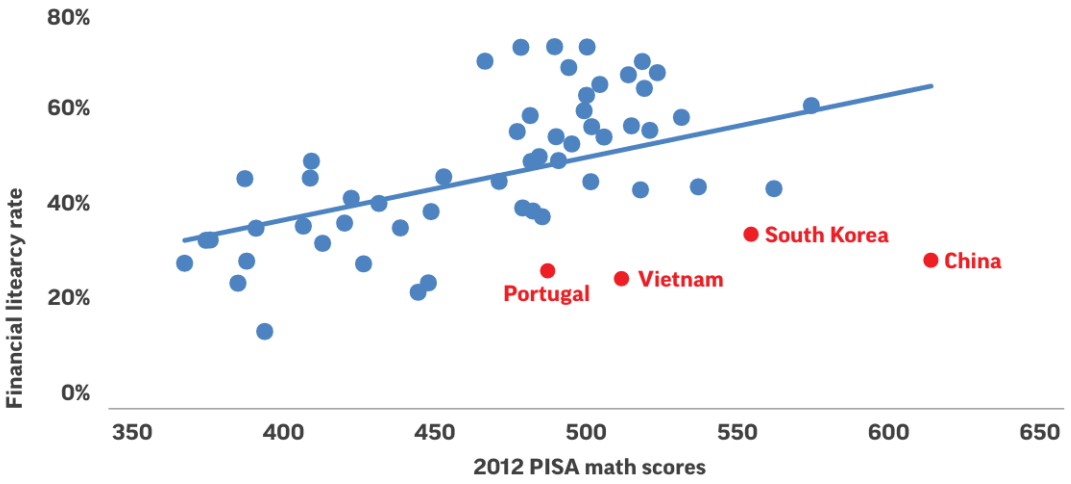

Figure 10: Stronger financial skills in countries with high test scores (Klapper, Lusardi, and Oudheusden 2015, p. 16)

Brazil, along with BRICS[4] countries — major emerging countries —, had low performance in all the concepts assessed, when compared to G7 countries (major advanced economies), as it is shown at Figure 11.

Figure 11: % of adults with correct answers by concept (Klapper, Lusardi and Oudheusden, 2015, p. 10)

Furthermore, there is a gender gap in financial literacy. In both advanced economies and emerging economies, women have weaker performance than men (Figure 12).

[4] BRICS is an acronym to refer to the countries of Brazil, Russia, India, China, and South Africa.

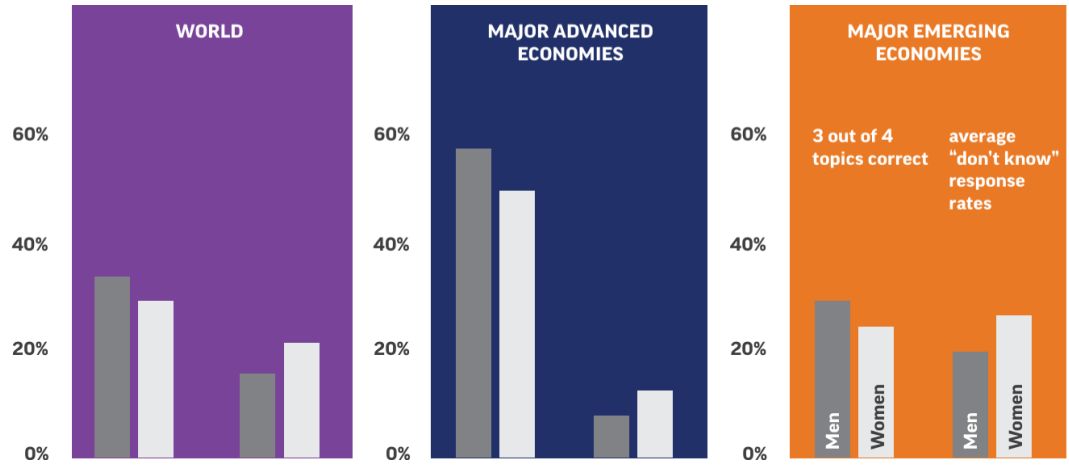

Figure 12: Gender gap in financial literacy (Klapper, Lusardi and Oudheusden, 2015, p. 12)

One last outcome from the Global FinLit Survey that is worth to note is the downtrend of financial skills of older people (Figure 13).

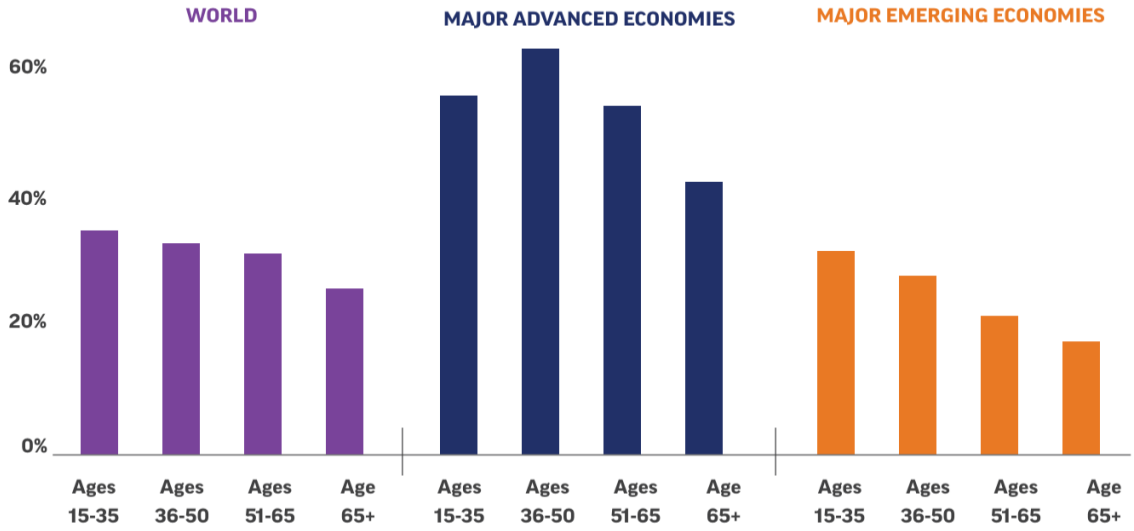

Figure 13: Financial literacy decreases with age (Klapper, Lusardi and Oudheusden, 2015, p. 13)

It is important to point out that aging decrement also occur in the richest economies, but upon a higher baseline.

7 What the results tell us?

Financial Education became part of the Brazilian curriculum in 2018, when a new document officially implemented it as part of basic education. Before that, Brazil's government had implemented in 2010 a National Strategy for Financial Education (ENEF), following recommendations from OECD. Nevertheless, until PISA 2018 results, there were no reason to celebrate Brazilian performance in financial literacy. Furthermore, due to Covid-19 pandemic, it is expected that the PISA 2022 assessment will not be able to capture any improvement in Brazil's grades.

Another important information for us to take into account is the increasing number of academic research made on the Financial Education since the launch of the curriculum document — Base Nacional Comum Curricular *[Common National Curriculum Base]* (Brasil, 2018).

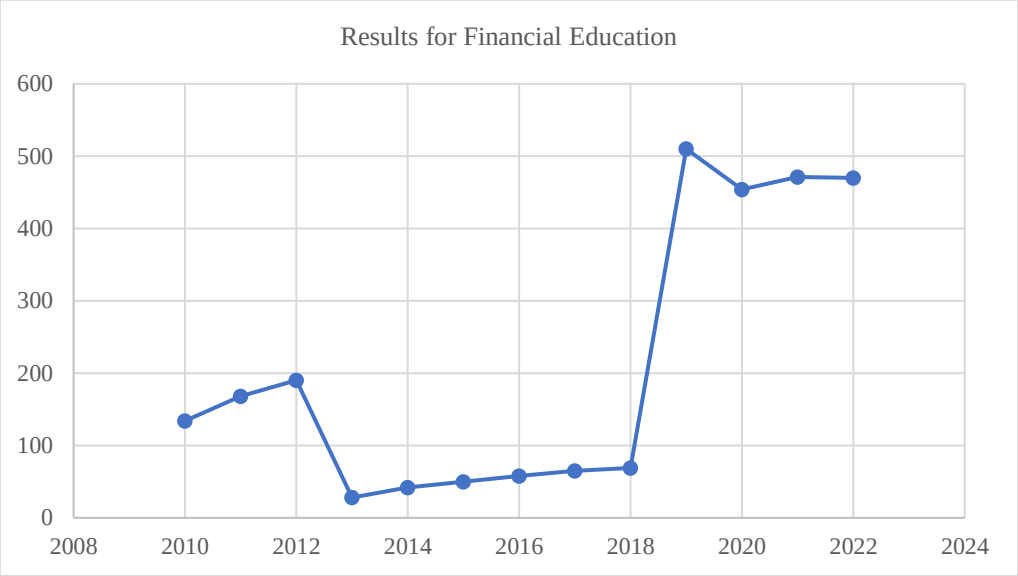

Figure 14: Number of thesis and dissertations on financial education subject (Data from the CAPES Theses and Dissertations Catalog[5])

Facing all data presented so far, it seems to us that although Brazil struggle to develop Financial Education in students from Basic Education and promotes a wide range of research in this area, unfortunately good results in financial literacy may never be achieved. In this context, a good result for Brazil would be not to appear at the lowest level of the table, which means to have less than 20% of the students in level 2 or below, and around 5% of them in level 5.

As we have shown, good results in financial literacy comes for those who have higher grades in Leading and Mathematics. Likewise, higher scores in financial literacy comes for those who earns money from work, have bank account, and live in societies with higher income — measured by GDP per capita — and less inequality. These variables, despite the grades in reading and mathematics, are not in charge of educational system nor pedagogical researchers/professors.

Another challenge that must be addressed is to reduce the gap between younger and older people, as well as between men and women, regarding to financial literacy, though it is not merely a local issue, but a problem to be faced by the whole world.

It is important to state that it is not a matter of giving up but, instead, raise awareness of the huge struggle that Brazil has to face for reducing the gap between our country and the major advanced economies. Concerning to the educational issues, we can say that it is necessary to join efforts not only in financial literacy, but also in mathematics, reading and sciences, which means that it is a problem that needs to be addressed by the entire educational system. Isolated efforts in financial literacy do not seem to be not enough to achieve better results.

Concluding, this study showed that it is not a case of working to develop financial education *per se*, but to join strength in several areas — educational, political and socioeconomic — in such a way that can help us to make our country a better place to liv, that is, a place where inequality is lower, income is higher and students can have a more qualified education in mathematics, reading and science, which would implicate in better results in financial literacy.

[5] The survey was conducted on December 10, 2023 on the website https://catalogodeteses.capes.gov.br

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